SEQUENCE LISTING

<110> Oregon Health & Science University
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Bartee, Eric
Mansouri, Mandana
Gouveia, Kristine

<120> DOWNREGULATION OF CELL SURFACE GLYCOPROTEINS BY A FAMILY OF HUMAN UBIQUITIN LIGASES

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<150> US 60/397,136
<151> 2002-07-19

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<170> PatentIn version 3.2

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Pro His Arg Ile Pro Asn Asn Thr Arg Thr Pro Glu Ile Ser Gly Asp
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ttg gct gac gcc tca caa acc tcc aca ttg aat gaa aaa tcc cca ggg     1106
Leu Ala Asp Ala Ser Gln Thr Ser Thr Leu Asn Glu Lys Ser Pro Gly
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cga tct gca agt cga tca agt aac att tca aaa gca agc agc cca aca     1154
Arg Ser Ala Ser Arg Ser Ser Asn Ile Ser Lys Ala Ser Ser Pro Thr
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aca ggg aca gct ccc agg agc cag tca agg ttg tct gtc tgt cca tcc     1202
Thr Gly Thr Ala Pro Arg Ser Gln Ser Arg Leu Ser Val Cys Pro Ser
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act cag gac atc tgc aga atc tgt cac tgc gaa ggg gat gaa gag agc     1250
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ccc ctc atc aca ccc tgt cgc tgc act ggg aca ctg cgc ttt gtc cac     1298
Pro Leu Ile Thr Pro Cys Arg Cys Thr Gly Thr Leu Arg Phe Val His
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cag tcc tgc ctc cac cag tgg ata aag agc tca gat aca cgc tgc tgt     1346
Gln Ser Cys Leu His Gln Trp Ile Lys Ser Ser Asp Thr Arg Cys Cys
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gag ctc tgc aag tat gac ttc ata atg gag acc aag ctc aaa ccc ctc     1394
Glu Leu Cys Lys Tyr Asp Phe Ile Met Glu Thr Lys Leu Lys Pro Leu
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cgg aag tgg gag aaa cta cag atg acc aca agt gaa agg agg aaa ata     1442
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Ser Leu Tyr Val Leu Ile Asp Arg Thr Ala Glu Glu Ile Lys Gln Gly
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aat gac aat ggt gtc ctt gaa tgg cca ttt tgg aca aaa ctg gtt gtg     1586
Asn Asp Asn Gly Val Leu Glu Trp Pro Phe Trp Thr Lys Leu Val Val
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gta gcc att ggc ttc aca gga ggt ctt gtc ttc atg tac gta cag tgt     1634
Val Ala Ile Gly Phe Thr Gly Gly Leu Val Phe Met Tyr Val Gln Cys
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aaa gtc tat gtt cag ttg tgg cgc agg ctg aag gcc tac aac cgt gtg     1682
Lys Val Tyr Val Gln Leu Trp Arg Arg Leu Lys Ala Tyr Asn Arg Val
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atc ttt gta caa aat tgc cca gac act gcc aaa aaa ctg gag aag aac     1730
Ile Phe Val Gln Asn Cys Pro Asp Thr Ala Lys Lys Leu Glu Lys Asn
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ttc tca tgt aat gta aac aca gac atc aaa gat gct gtg gta gtg cct     1778
Phe Ser Cys Asn Val Asn Thr Asp Ile Lys Asp Ala Val Val Val Pro
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Val Pro Gln Thr Gly Ala Asn Ser Leu Pro Ser Ala Glu Gly Gly Pro
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cct gaa gtt gta tca gtc tga tggaacctgt tgggagtttc ttcaccgaag        1877
Pro Glu Val Val Ser Val
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Arg Ser Gln Ser Arg Leu Ser Val Cys Pro Ser Thr Gln Asp Ile Cys
65 70 75 80

Arg Ile Cys His Cys Glu Gly Asp Glu Glu Ser Pro Leu Ile Thr Pro
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Cys Arg Cys Thr Gly Thr Leu Arg Phe Val His Gln Ser Cys Leu His
100 105 110

Gln Trp Ile Lys Ser Ser Asp Thr Arg Cys Cys Glu Leu Cys Lys Tyr
115 120 125

Asp Phe Ile Met Glu Thr Lys Leu Lys Pro Leu Arg Lys Trp Glu Lys
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145 150 155 160

Phe His Val Ile Ala Ile Thr Cys Val Val Trp Ser Leu Tyr Val Leu
165 170 175

Ile Asp Arg Thr Ala Glu Glu Ile Lys Gln Gly Asn Asp Asn Gly Val

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Leu Glu Trp Pro Phe Trp Thr Lys Leu Val Val Val Ala Ile Gly Phe
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Thr Gly Gly Leu Val Phe Met Tyr Val Gln Cys Lys Val Tyr Val Gln
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Leu Trp Arg Arg Leu Lys Ala Tyr Asn Arg Val Ile Phe Val Gln Asn
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Cys Pro Asp Thr Ala Lys Lys Leu Glu Lys Asn Phe Ser Cys Asn Val
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cag tat gtg gca cag gtg act tca agg gat ggc cgg ctc ctc tcc acc      501
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Val Ile Arg Ala Leu Asp Thr Pro Ser Asp Gly Pro Phe Cys Arg Ile
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tgc cat gag gga gcg aac ggg gag tgc ttg ctg tcc ccg tgt ggc tgc      597
Cys His Glu Gly Ala Asn Gly Glu Cys Leu Leu Ser Pro Cys Gly Cys
            70                  75                  80

acc ggc acg ctg ggt gcc gtg cat aag agc tgt ctg gag aag tgg ctt      645
Thr Gly Thr Leu Gly Ala Val His Lys Ser Cys Leu Glu Lys Trp Leu
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tcc tca tct aac acc agc tac tgc gag ctg tgc cac acg gag ttt gca      693
Ser Ser Ser Asn Thr Ser Tyr Cys Glu Leu Cys His Thr Glu Phe Ala
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gtg gag aaa cgg cct cga ccc ctc aca gag tgg ctg aag gac ccg ggg      741
Val Glu Lys Arg Pro Arg Pro Leu Thr Glu Trp Leu Lys Asp Pro Gly
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ccg cgg acg gag aag cgg aca ctg tgc tgc gac atg gtg tgt ttc ctg      789
Pro Arg Thr Glu Lys Arg Thr Leu Cys Cys Asp Met Val Cys Phe Leu
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Phe Ile Thr Pro Leu Ala Ala Ile Ser Gly Trp Leu Cys Leu Arg Gly
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gcc cag gac cac ctc cgg ctc cac agc cag ctg gag gcc gtg ggt ctc      885
Ala Gln Asp His Leu Arg Leu His Ser Gln Leu Glu Ala Val Gly Leu
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att gcc ctc acc atc gcc ctc ttc acc atc tat gtc ctc tgg acg ctg      933
Ile Ala Leu Thr Ile Ala Leu Phe Thr Ile Tyr Val Leu Trp Thr Leu
    180                 185                 190

gtc tcc ttc cgc tac cac tgc cag ctg tac tcc gag tgg aga aag acc      981
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195                 200                 205                 210

aac cag aaa gtt cgc ctg aag atc cgg gag gcg gac agc ccc gag ggc     1029
Asn Gln Lys Val Arg Leu Lys Ile Arg Glu Ala Asp Ser Pro Glu Gly
                215                 220                 225

ccc cag cat tct cca ctg gca gct gga ctc ctg aag aag gtg gca gag     1077
Pro Gln His Ser Pro Leu Ala Ala Gly Leu Leu Lys Lys Val Ala Glu
            230                 235                 240

gag aca cca gta tga atgctgggct ctccggaccc tgcagcagag aggccagagg     1132
Glu Thr Pro Val
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35 40 45

Ser Thr Val Ile Arg Ala Leu Asp Thr Pro Ser Asp Gly Pro Phe Cys
50 55 60

Arg Ile Cys His Glu Gly Ala Asn Gly Glu Cys Leu Leu Ser Pro Cys
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Gly Cys Thr Gly Thr Leu Gly Ala Val His Lys Ser Cys Leu Glu Lys
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Trp Leu Ser Ser Ser Asn Thr Ser Tyr Cys Glu Leu Cys His Thr Glu
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Phe Ala Val Glu Lys Arg Pro Arg Pro Leu Thr Glu Trp Leu Lys Asp
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Arg Gly Ala Gln Asp His Leu Arg Leu His Ser Gln Leu Glu Ala Val
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Gly Leu Ile Ala Leu Thr Ile Ala Leu Phe Thr Ile Tyr Val Leu Trp
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Thr Leu Val Ser Phe Arg Tyr His Cys Gln Leu Tyr Ser Glu Trp Arg
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Lys Thr Asn Gln Lys Val Arg Leu Lys Ile Arg Glu Ala Asp Ser Pro
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Thr Leu Leu Leu Ser Phe Leu Gly Met Ala Trp Ala Leu Gln Ala Ala
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gac acc tgt cca gag gtg aag atg gtg ggc ctg gag ggc tct gac aag       145
Asp Thr Cys Pro Glu Val Lys Met Val Gly Leu Glu Gly Ser Asp Lys
30                  35                  40                  45

ctc acc att ctc cga ggc tgt ccg ggg ctg cct ggg gcc cct ggg ccc       193
Leu Thr Ile Leu Arg Gly Cys Pro Gly Leu Pro Gly Ala Pro Gly Pro
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Gly Pro Pro Gly Lys Ala Gly Pro Pro Gly Pro Asn Gly Ala Pro Gly
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gag ccc cag ccg tgc ctg aca ggt gac tga ccacccccac actcctccca        339
Glu Pro Gln Pro Cys Leu Thr Gly Asp
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tggacacgga cggagggggc tggaccgtga gtgtggggct gggcagaggc ggtcagcctg    939

ggagtcccgg aggccaggct gcacacctgg tgggagaaca cactctggaa ttctctattc    999

tcctggtcgg ggacagtcag agatgatggg ggagatgacc ggtgggtaaa agtccaggcc   1059

tttgggggag gctgggagag gttgggtgct ctcctgctgt gtggcttggg gcttgttgcc   1119

tcccctctct gagcccccat ttcctccttc atcctgtgga gtctgtgagg agaacaggtg   1179

ggcgtgctgg tgaccccgcc tgtgatgctc tgccaactac aaatgctgct cctctggagg   1239

gcgggtcccc cgtgctgtgg gacgtcggcc tggccccccc ggctcctgtc ccctggcttc   1299

tccacaggtt ttccagcgga gggtggatgg ctctgtggac ttctaccggg actgggccac   1359

gtacaagcag ggcttcggca gtcggctggg ggagttctgg ctggggaatg acaacatcca   1419

cgccctgacc gcccagggaa ccagcgagct ccgtgtagac ctggtggact ttgaggacaa   1479

ctaccagttt gctaagtaca gatcattcaa ggtggccgac gaggcggaga agtacaatct   1539

ggtcctgggg gccttcgtgg agggcagtgc gg                                 1571
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<210> 43
<211> 102
<212> PRT

<213> Homo sapiens

<400> 43

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Met Glu Leu Asp Arg Ala Val Gly Val Leu Gly Ala Ala Thr Leu Leu
1               5                   10                  15

Leu Ser Phe Leu Gly Met Ala Trp Ala Leu Gln Ala Ala Asp Thr Cys
            20                  25                  30

Pro Glu Val Lys Met Val Gly Leu Glu Gly Ser Asp Lys Leu Thr Ile
        35                  40                  45

Leu Arg Gly Cys Pro Gly Leu Pro Gly Ala Pro Gly Pro Lys Gly Glu
    50                  55                  60

Ala Gly Thr Asn Gly Lys Arg Gly Glu Arg Gly Pro Pro Gly Pro Pro
65                  70                  75                  80

Gly Lys Ala Gly Pro Pro Gly Pro Asn Gly Ala Pro Gly Glu Pro Gln
                85                  90                  95

Pro Cys Leu Thr Gly Asp
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<210> 44
<211> 4450
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1642)..(3000)

<400> 44

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gccttacctc gttgcatctg cgaggagagg tagcaacagc gagcctagcc agccagaggc    120

ggtggagagg aggaaggggc ggggtggggg ggcagagagc gggccgaggc cgcccttggt    180

gggggtagcg ggggcagagc tgccgagcag acccggcagc cgccctcctc cgcccccacc    240

ctccagaagc actcttgcct gagaaccgaa ttattccact agtattattt catttttat     300

tactcccccc cctcactccc cagccgcccc caccccacg ccggcctcgc ctctggttgc     360

atggcagcgc tgcccgggcg cgggggctca gggctggccc ccagggaagg gggaggagga    420

ggaggatcat gaaggccgga gtcgcgaccg cgccggacgg cgggcagcag ccagaggacg    480
```

```
agccggagca gcccccgccc cggagacacc cggacgccga gcagcagtcg cctccgccgc    540

cgcagcagca gctgcgggcg cgggccgacc cggagccgga ggaggagggc gaccgcgacc    600

cagaggagga agaggaggag aaggcgaggc cactcgcccg cccggacctg cccttctctc    660

ggctcttgcc cctcgaccga agggaccttt gatggaaccg aggggagggc gccacggatt    720

tgccgactgc agcaggggtg ggctgggggc tgagataatg taaccactcc tttctcctgt    780

tctctcccac acgcccctct cctctacccc tattctctgc tccactgccc tctcaccccg    840

gtacacacac ccttcctcta gccaggatct tcatgctcag gaaggaggcg cctctgcaag    900

ggttaaacga tcttttcttt ttctcccatc ctttttcctt cccaaacctc tattttacct    960

cccttctcct aattggcttt cccctcttcg gtgtaaccct ttggctgcgg aggcaaagca   1020

caagccccta gcccagtttc acctgcaaca ccccctcccc acccaactgc tctcttaaaa   1080

gcaactctgg tgcttctggg ggttaattgc cccagttttc tgcccaggag aattaaaact   1140

tctcccaatc ttctctcctc ccctaccttg actcccccaa cccctaccac ctgagaaaaa   1200

cgatcttttc tctctcacac atgcagtcct caattcttca ttgagctagt tttctctaag   1260

cccagctcaa tccactccag atttgattta caattgtccc caccctttta tataaaagaa   1320

agatttctca ctgcgtagga atttgagaag aacccaataa tcctttcctg gggaactttt   1380

aaacaattcg acattgattt aaacaattcg acagaggctc tagtggcccc tccaccacgc   1440

ttcttcaatc cctctgctcc taccagtgtc ctcaggtcaa aagcagaaag gagacacact   1500

gaacaaagtt ggaggttggg gtgggtgtgt gagggcaaga aaaacttttt tgttattggg   1560

ctttccaggt ggagttcaga accagtgact cacacttctc agtcctggga gcaatttatt   1620

tgctacttgg aggggttgta a gaa aag cca gtg aga aag cag act ccc ccc     1671
                       Glu Lys Pro Val Arg Lys Gln Thr Pro Pro
                       1               5                   10

aca aca cag atc cac tgt gga ccc cca aaa cct gtc ctg tcc ccc tct     1719
Thr Thr Gln Ile His Cys Gly Pro Pro Lys Pro Val Leu Ser Pro Ser
                15                  20                  25

ttt aag act cca gcc acc cct ctt ggg ctc tct act tcc acg ggg cac     1767
Phe Lys Thr Pro Ala Thr Pro Leu Gly Leu Ser Thr Ser Thr Gly His
            30                  35                  40

atg ctg atg ccc ctg tgt ggg ctg ctc tgg tgg tgg tgg tgc tgc tgc     1815
Met Leu Met Pro Leu Cys Gly Leu Leu Trp Trp Trp Trp Cys Cys Cys
        45                  50                  55

tcc ggc tgg tac tgc tat gga ttg tgt gcc cca gcc ccc cag atg ttg     1863
Ser Gly Trp Tyr Cys Tyr Gly Leu Cys Ala Pro Ala Pro Gln Met Leu
    60                  65                  70

cgc cac cag ggt ctc ctc aag tgc cgc tgc cgc atg ctc ttc aat gac     1911
```

```
Arg His Gln Gly Leu Leu Lys Cys Arg Cys Arg Met Leu Phe Asn Asp
75                  80                  85                  90

ctg aag gtt ttc tta ctg cgg cgc cct cct caa gcg ccc ctg ccc atg     1959
Leu Lys Val Phe Leu Leu Arg Arg Pro Pro Gln Ala Pro Leu Pro Met
                95                  100                 105

cac ggc gac ccc cag ccc ccc ggt ttg gcg gcc aac aac acc ctt ccg     2007
His Gly Asp Pro Gln Pro Pro Gly Leu Ala Ala Asn Asn Thr Leu Pro
            110                 115                 120

gct ctg ggc gcc ggg ggg tgg gca ggc tgg agg ggc ccc cga gaa gtg     2055
Ala Leu Gly Ala Gly Gly Trp Ala Gly Trp Arg Gly Pro Arg Glu Val
        125                 130                 135

gtg ggc agg gag ccc cct cct gtg cca cct cca ccc ccc ttg cca cct     2103
Val Gly Arg Glu Pro Pro Pro Val Pro Pro Pro Pro Pro Leu Pro Pro
    140                 145                 150

tct tct gtg gaa gat gac tgg ggt ggc cca gcc aca gag cca cct gcc     2151
Ser Ser Val Glu Asp Asp Trp Gly Gly Pro Ala Thr Glu Pro Pro Ala
155                 160                 165                 170

tcg ctg ctc agc agt gcc tcc tca gat gac ttc tgt aag gag aag acc     2199
Ser Leu Leu Ser Ser Ala Ser Ser Asp Asp Phe Cys Lys Glu Lys Thr
                175                 180                 185

gag gat cgc tac tca ctg ggc agc agc ttg gac agt ggt atg agg acc     2247
Glu Asp Arg Tyr Ser Leu Gly Ser Ser Leu Asp Ser Gly Met Arg Thr
            190                 195                 200

cca ctc tgc cgc atc tgc ttc cag ggg cca gaa cag ggg gag ctg ctg     2295
Pro Leu Cys Arg Ile Cys Phe Gln Gly Pro Glu Gln Gly Glu Leu Leu
        205                 210                 215

agc cca tgc cgc tgt gat ggc tcg gtc aag tgc aca cac cag cct tgc     2343
Ser Pro Cys Arg Cys Asp Gly Ser Val Lys Cys Thr His Gln Pro Cys
    220                 225                 230

ctc atc aag tgg atc agc gag cgg ggc tgc tgg agc tgc gag ctg tgc     2391
Leu Ile Lys Trp Ile Ser Glu Arg Gly Cys Trp Ser Cys Glu Leu Cys
235                 240                 245                 250

tac tac aag tac cac gtc atc gcc ata agc aca aaa aat cct ctg cag     2439
Tyr Tyr Lys Tyr His Val Ile Ala Ile Ser Thr Lys Asn Pro Leu Gln
                255                 260                 265

tgg cag gcc atc tct ctg acg gtc att gag aag gtt cag gtt gca gcc     2487
Trp Gln Ala Ile Ser Leu Thr Val Ile Glu Lys Val Gln Val Ala Ala
            270                 275                 280

gcc atc ctg ggc tcc ctc ttc ctc atc gcc agt att tct tgg ctc atc     2535
Ala Ile Leu Gly Ser Leu Phe Leu Ile Ala Ser Ile Ser Trp Leu Ile
        285                 290                 295

tgg tca act ttc agc ccc tcg gca aga tgg cag cgc caa gac ctt ctc     2583
Trp Ser Thr Phe Ser Pro Ser Ala Arg Trp Gln Arg Gln Asp Leu Leu
    300                 305                 310
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ttc cag atc tgc tac ggg atg tat ggc ttc atg gac gtg gtg tgc ata     2631
Phe Gln Ile Cys Tyr Gly Met Tyr Gly Phe Met Asp Val Val Cys Ile
315                 320                 325                 330

ggt ctc atc atc cat gaa gga ccc tcg gtg tac cgc atc ttt aaa cgg     2679
Gly Leu Ile Ile His Glu Gly Pro Ser Val Tyr Arg Ile Phe Lys Arg
                335                 340                 345

tgg cag gct gtc aac cag cag tgg aaa gtg ctg aac tat gac aag aca     2727
Trp Gln Ala Val Asn Gln Gln Trp Lys Val Leu Asn Tyr Asp Lys Thr
            350                 355                 360

aaa gac ctg gag gat caa aag gca gga ggc agg acc aac ccc cgg acc     2775
Lys Asp Leu Glu Asp Gln Lys Ala Gly Gly Arg Thr Asn Pro Arg Thr
        365                 370                 375

tcc tca tcc acc cag gcc aat atc ccc tcc tcg gaa gag gag acc gca     2823
Ser Ser Ser Thr Gln Ala Asn Ile Pro Ser Ser Glu Glu Glu Thr Ala
    380                 385                 390

ggc acc cct gcc cct gag cag ggc cct gcc cag gct gcc ggc cac ccc     2871
Gly Thr Pro Ala Pro Glu Gln Gly Pro Ala Gln Ala Ala Gly His Pro
395                 400                 405                 410

tca ggc cct ctg tcc cat cac cac tgt gct tat acc atc ctg cac atc     2919
Ser Gly Pro Leu Ser His His His Cys Ala Tyr Thr Ile Leu His Ile
                415                 420                 425

ctg agt cac ttg aga cct cat gaa cag cga agt ccc cca ggc agc agc     2967
Leu Ser His Leu Arg Pro His Glu Gln Arg Ser Pro Pro Gly Ser Ser
            430                 435                 440

cga gag ctg gtc atg aga gtc acg aca gtg tga gagcagaggc ccggaaggaa   3020
Arg Glu Leu Val Met Arg Val Thr Thr Val
        445                 450

ggccatgacc accactgagg gcccggagca gggtggggag gtgcagtggc acccccggag   3080

ccaacagagg gagcaggcag agggtggggg acctggcggg agccctgggg tagtgtcaga   3140

gcgggagtga ggctggtgca ggagcagttc tgctatttcc aatcagtcaa tgccactctc   3200

cacaacaaca atgaaaacca acaccaactc aacaacaaag tgcaatacag gctgaacctg   3260

gcccaacaga aaaaccctgc cccaatgcac ctgcaggcaa ggtacccgaa gaagcagagg   3320

ctgagggcag gcaaagcctg tgtgactgtg gcagtgccgg aggccaaggg ggccaagagg   3380

aaaagcatct gtggtctgcc ctgctctcac cctgtttggt tttgtttctc ctggggctgt   3440

gttctgcagg cagccagaaa aggaggaggc acgggtgagc tggcagggac acactgcctt   3500

tggggctcct gggctcattt ggatgagcaa gattcgctga caaatggctg tggggatggt   3560

ggggtggatg gtcagggagg gatcctcagg gagggatatg ctggtgtgag cagccagagg   3620

gagagtgtgt ctccttcctg aaggaacttc caaatggaac tcccgatttc aggtgggcta   3680

aaagagggct taggtttgga aaagggtgtc cttctgtgcc cttgttaatt tattttatag   3740
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tgatttggtt caaagatgtt tacaggacac acacacacac acacacacac acacacacac 3800

acacacaccc ctagagaaaa gtacagattt ccagtggata tttcaagcac agttctgctg 3860

ctgtggcttc agctttggaa gctgtcaatc ccggagcaac tttcccaact acccaacccc 3920

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aaaaggacac tgtcaagtac ttttttaaac tagtttttag ggtttttttaa aactctctgt 4400

tgtttgtaat attctcttaa aagcttgaaa ataaaacttc tttccctacc 4450

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<211> 452
<212> PRT
<213> Homo sapiens

<400> 45

Glu Lys Pro Val Arg Lys Gln Thr Pro Pro Thr Thr Gln Ile His Cys
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Gly Pro Pro Lys Pro Val Leu Ser Pro Ser Phe Lys Thr Pro Ala Thr
20 25 30

Pro Leu Gly Leu Ser Thr Ser Thr Gly His Met Leu Met Pro Leu Cys
35 40 45

Gly Leu Leu Trp Trp Trp Trp Cys Cys Cys Ser Gly Trp Tyr Cys Tyr
50 55 60

Gly Leu Cys Ala Pro Ala Pro Gln Met Leu Arg His Gln Gly Leu Leu
65 70 75 80

Lys Cys Arg Cys Arg Met Leu Phe Asn Asp Leu Lys Val Phe Leu Leu
85 90 95

Arg Arg Pro Pro Gln Ala Pro Leu Pro Met His Gly Asp Pro Gln Pro
100 105 110

```
Pro Gly Leu Ala Ala Asn Asn Thr Leu Pro Ala Leu Gly Ala Gly Gly
        115                 120                 125

Trp Ala Gly Trp Arg Gly Pro Arg Glu Val Val Gly Arg Glu Pro Pro
    130                 135                 140

Pro Val Pro Pro Pro Pro Pro Leu Pro Pro Ser Ser Val Glu Asp Asp
145                 150                 155                 160

Trp Gly Gly Pro Ala Thr Glu Pro Pro Ala Ser Leu Leu Ser Ser Ala
                165                 170                 175

Ser Ser Asp Asp Phe Cys Lys Glu Lys Thr Glu Asp Arg Tyr Ser Leu
            180                 185                 190

Gly Ser Ser Leu Asp Ser Gly Met Arg Thr Pro Leu Cys Arg Ile Cys
        195                 200                 205

Phe Gln Gly Pro Glu Gln Gly Glu Leu Leu Ser Pro Cys Arg Cys Asp
    210                 215                 220

Gly Ser Val Lys Cys Thr His Gln Pro Cys Leu Ile Lys Trp Ile Ser
225                 230                 235                 240

Glu Arg Gly Cys Trp Ser Cys Glu Leu Cys Tyr Tyr Lys Tyr His Val
                245                 250                 255

Ile Ala Ile Ser Thr Lys Asn Pro Leu Gln Trp Gln Ala Ile Ser Leu
            260                 265                 270

Thr Val Ile Glu Lys Val Gln Val Ala Ala Ala Ile Leu Gly Ser Leu
        275                 280                 285

Phe Leu Ile Ala Ser Ile Ser Trp Leu Ile Trp Ser Thr Phe Ser Pro
    290                 295                 300

Ser Ala Arg Trp Gln Arg Gln Asp Leu Leu Phe Gln Ile Cys Tyr Gly
305                 310                 315                 320

Met Tyr Gly Phe Met Asp Val Val Cys Ile Gly Leu Ile Ile His Glu
                325                 330                 335

Gly Pro Ser Val Tyr Arg Ile Phe Lys Arg Trp Gln Ala Val Asn Gln
```

```
            340                 345                 350

Gln Trp Lys Val Leu Asn Tyr Asp Lys Thr Lys Asp Leu Glu Asp Gln
        355                 360                 365

Lys Ala Gly Gly Arg Thr Asn Pro Arg Thr Ser Ser Ser Thr Gln Ala
    370                 375                 380

Asn Ile Pro Ser Ser Glu Glu Glu Thr Ala Gly Thr Pro Ala Pro Glu
385                 390                 395                 400

Gln Gly Pro Ala Gln Ala Ala Gly His Pro Ser Gly Pro Leu Ser His
                405                 410                 415

His His Cys Ala Tyr Thr Ile Leu His Ile Leu Ser His Leu Arg Pro
            420                 425                 430

His Glu Gln Arg Ser Pro Pro Gly Ser Ser Arg Glu Leu Val Met Arg
        435                 440                 445

Val Thr Thr Val
    450
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<210> 46
<211> 3896
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (293)..(1129)

<400> 46

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aggccctgca ccgccgccgc caggctagcg gagctgcccc gggaagctgg gtgacgggtt    180

cgcggctgcc gccggactgc ggcctactcc gccgcctctc agtgctattg tccctgggcc    240

tggccttgag cgggtccact ggggaaggcc gtgtgcgccg gctccgcgga ag atg ccg    298
                                                          Met Pro
                                                          1

gac caa gcc cta cag cag atg ctg gac aga agt tgc tgg gtt tgt ttt      346
Asp Gln Ala Leu Gln Gln Met Leu Asp Arg Ser Cys Trp Val Cys Phe
        5                   10                  15

gct act gat gaa gat gat aga aca gct gaa tgg gtg aga cca tgc agg      394
```

```
Ala Thr Asp Glu Asp Asp Arg Thr Ala Glu Trp Val Arg Pro Cys Arg
    20                  25                  30

tgc aga gga tct aca aaa tgg gtt cac cag gcc tgt cta caa cgc tgg      442
Cys Arg Gly Ser Thr Lys Trp Val His Gln Ala Cys Leu Gln Arg Trp
35                  40                  45                  50

gtg gat gaa aag caa aga gga aac agt aca gcc aga gtg gca tgt cct      490
Val Asp Glu Lys Gln Arg Gly Asn Ser Thr Ala Arg Val Ala Cys Pro
                55                  60                  65

cag tgc aat gct gaa tac cta ata gtt ttt cca aaa ttg ggt cca gtg      538
Gln Cys Asn Ala Glu Tyr Leu Ile Val Phe Pro Lys Leu Gly Pro Val
            70                  75                  80

gtt tac gtc ttg gat ctt gca gat aga ctg atc tca aaa gcc tgt cca      586
Val Tyr Val Leu Asp Leu Ala Asp Arg Leu Ile Ser Lys Ala Cys Pro
        85                  90                  95

ttt gct gca gca gga ata atg gtc ggc tct atc tat tgg aca gct gtg      634
Phe Ala Ala Ala Gly Ile Met Val Gly Ser Ile Tyr Trp Thr Ala Val
    100                 105                 110

act tat gga gca gtg aca gtg atg cag gtt gta ggt cat aaa gaa ggt      682
Thr Tyr Gly Ala Val Thr Val Met Gln Val Val Gly His Lys Glu Gly
115                 120                 125                 130

ctg gat gtt atg gag aga gct gat cct tta ttc ctt tta att gga ctt      730
Leu Asp Val Met Glu Arg Ala Asp Pro Leu Phe Leu Leu Ile Gly Leu
                135                 140                 145

cct act att cct gtc atg ctg ata tta ggc aag atg att cgc tgg gag      778
Pro Thr Ile Pro Val Met Leu Ile Leu Gly Lys Met Ile Arg Trp Glu
            150                 155                 160

gac tat gtg ctt aga ctg tgg cgc aaa tac tcg aat aaa cta caa att      826
Asp Tyr Val Leu Arg Leu Trp Arg Lys Tyr Ser Asn Lys Leu Gln Ile
        165                 170                 175

tta aat agt ata ttt cca ggg ata ggt tgt cct gtt cct cga att cca      874
Leu Asn Ser Ile Phe Pro Gly Ile Gly Cys Pro Val Pro Arg Ile Pro
    180                 185                 190

gct gag gcc aat cct tta gca gat cat gtc tct gct act cga atc ttg      922
Ala Glu Ala Asn Pro Leu Ala Asp His Val Ser Ala Thr Arg Ile Leu
195                 200                 205                 210

tgt gga gcc ctt gtc ttt cct act att gct aca ata gtt ggt aaa ttg      970
Cys Gly Ala Leu Val Phe Pro Thr Ile Ala Thr Ile Val Gly Lys Leu
                215                 220                 225

atg ttc agt agt gtt aac tct aat tta caa agg aca atc ttg ggt gga     1018
Met Phe Ser Ser Val Asn Ser Asn Leu Gln Arg Thr Ile Leu Gly Gly
            230                 235                 240

att gcg ttt gtt gcc ata aaa gga gca ttt aaa gtt tac ttc aaa cag     1066
Ile Ala Phe Val Ala Ile Lys Gly Ala Phe Lys Val Tyr Phe Lys Gln
        245                 250                 255
```

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cag caa tat tta cga cag gca cac cgc aaa att ctg aat tat cca gaa     1114
Gln Gln Tyr Leu Arg Gln Ala His Arg Lys Ile Leu Asn Tyr Pro Glu
    260                 265                 270

caa gaa gaa gca taa aactgacttc tggttgttct gcagttctct catccttatg     1169
Gln Glu Glu Ala
275

aatctgttgt gttgttttga ttccatcatt aatgcacttg tggagacttg tgataagctg   1229

ctgctcctat atttttaag aaatataata aagcacttag ggcaggggaa atcatctcgg   1289

taatcatgga acctaaggat gtgatttgtt ttcattgttt gtatgtacta cttttatggc   1349

agtcatatga accattatct tagcatggta aacctgggtt ttgttcatat tttctccaga   1409

cagaaatgca aagatcaaac tgtgcaaata ttaaaaaaat gcacatgctg ttttattcaa   1469

atgcctcttt tgtacatgtt catgtttagt gttttctcag aatcagcaac tcaaggtact   1529

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gacatagtgg tgaacaagac agacttggtc caagctctta cagagttgac agtctagttt   2129

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gaagccattt tcaatagatt ggccatttta atgttcagca acctgaatgg ttatttttgt   2429

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taatgcatgt caataataaa tgtttccccc tactgataag cggccacttt aggagtgtag   2549

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ctggtttcta tagtatgaat gtcttaattt tgagttatat gatgtttatt tgaatgactg   2669

ttgaacattc aaatttgtat tatttggaga tgaagatttg actaacagtg agccttatta   2729
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ttaaatggac acatatcttg caaaattttg ttgtatagaa cagtttttag gcagccttta 2909

ctaaagttat gcaaacacac agttccccat ttactacatt aatgcccttg acagggagta 2969

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agagtggcct ctagccccga attgaacact tttaaaccta aagagcctta ttattattag 3149

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aaaagagcat aggcagactt aaagttggat agacctgggt tcaaatcata gttcagcttt 3269

caataactgt atgtatgatt ttggctaaag gatttgactt tctctcaact gcagttttct 3329

taatctttga aatgcaaata atgtttatct cagaagacta tttctaggat taactgagag 3389

attaaaggaa cagcagcact taggctcaaa atcgccccta caaagcagta gttgtttctt 3449

aattgctaag taatctgttt gcactctagg aaaagtaaat ggagaggtaa aagaaaggca 3509

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cagtttattt tcatatttct ttactgtgtt atttctggaa actttaatgt tttaaacctc 3629

ttttataaaa ttcaatgacg actactagaa ttctattctt ttcaaaagtt aacttatctc 3689

caaagtggct gaaaatattg tttaccatta catgattatg aaatgactgt gaagaatata 3749

aaattaaact tagtgactta attagtcact gccttgctaa ctttgctgta attttttaa 3809

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Cys Phe Ala Thr Asp Glu Asp Asp Arg Thr Ala Glu Trp Val Arg Pro
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Cys Arg Cys Arg Gly Ser Thr Lys Trp Val His Gln Ala Cys Leu Gln
35 40 45

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Arg Trp Val Asp Glu Lys Gln Arg Gly Asn Ser Thr Ala Arg Val Ala
    50                  55                  60

Cys Pro Gln Cys Asn Ala Glu Tyr Leu Ile Val Phe Pro Lys Leu Gly
65                  70                  75                  80

Pro Val Val Tyr Val Leu Asp Leu Ala Asp Arg Leu Ile Ser Lys Ala
                85                  90                  95

Cys Pro Phe Ala Ala Ala Gly Ile Met Val Gly Ser Ile Tyr Trp Thr
            100                 105                 110

Ala Val Thr Tyr Gly Ala Val Thr Val Met Gln Val Val Gly His Lys
        115                 120                 125

Glu Gly Leu Asp Val Met Glu Arg Ala Asp Pro Leu Phe Leu Leu Ile
    130                 135                 140

Gly Leu Pro Thr Ile Pro Val Met Leu Ile Leu Gly Lys Met Ile Arg
145                 150                 155                 160

Trp Glu Asp Tyr Val Leu Arg Leu Trp Arg Lys Tyr Ser Asn Lys Leu
                165                 170                 175

Gln Ile Leu Asn Ser Ile Phe Pro Gly Ile Gly Cys Pro Val Pro Arg
            180                 185                 190

Ile Pro Ala Glu Ala Asn Pro Leu Ala Asp His Val Ser Ala Thr Arg
        195                 200                 205

Ile Leu Cys Gly Ala Leu Val Phe Pro Thr Ile Ala Thr Ile Val Gly
    210                 215                 220

Lys Leu Met Phe Ser Ser Val Asn Ser Asn Leu Gln Arg Thr Ile Leu
225                 230                 235                 240

Gly Gly Ile Ala Phe Val Ala Ile Lys Gly Ala Phe Lys Val Tyr Phe
                245                 250                 255

Lys Gln Gln Gln Tyr Leu Arg Gln Ala His Arg Lys Ile Leu Asn Tyr
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Pro Glu Gln Glu Glu Ala
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Val Ser Leu Ala Phe Cys Gln Pro Leu Ser Leu Ser Leu Ser Pro Leu
1               5                   10                  15

ctt cct ctc gct tcc tct ctc gca cct gag cgt acg cac ctg ccc ggg       96
Leu Pro Leu Ala Ser Ser Leu Ala Pro Glu Arg Thr His Leu Pro Gly
            20                  25                  30

ccc ggc tcc ctc ctc ctc tcc cct ccc tct ttc ccc gcc cgg ccg cgg      144
Pro Gly Ser Leu Leu Leu Ser Pro Pro Ser Phe Pro Ala Arg Pro Arg
        35                  40                  45

gag cct cgt ggc tgc gtc acc gcc gcc ccc cca gac aag atg gac acc      192
Glu Pro Arg Gly Cys Val Thr Ala Ala Pro Pro Asp Lys Met Asp Thr
    50                  55                  60

gcg gag gaa gac ata tgt aga gtg tgt cgg tca gaa gga aca cct gag      240
Ala Glu Glu Asp Ile Cys Arg Val Cys Arg Ser Glu Gly Thr Pro Glu
65                  70                  75                  80

aaa ccg ctt tat cat cct tgt gta tgt act ggc agt att aag ttt atc      288
Lys Pro Leu Tyr His Pro Cys Val Cys Thr Gly Ser Ile Lys Phe Ile
                85                  90                  95

cat caa gaa tgc tta gtt caa tgg ctg aaa cac agt cga aaa gaa tac      336
His Gln Glu Cys Leu Val Gln Trp Leu Lys His Ser Arg Lys Glu Tyr
            100                 105                 110

tgt gaa tta tgc aag cac aga ttt gct ttt aca cca att tat tct cca      384
Cys Glu Leu Cys Lys His Arg Phe Ala Phe Thr Pro Ile Tyr Ser Pro
        115                 120                 125

gat atg cct tca cgg ctt cca att caa gac ata ttt gct gga ctg gtt      432
Asp Met Pro Ser Arg Leu Pro Ile Gln Asp Ile Phe Ala Gly Leu Val
    130                 135                 140

aca agt att ggc act gca ata cga tat tgg ttt cat tat aca ctt gtg      480
Thr Ser Ile Gly Thr Ala Ile Arg Tyr Trp Phe His Tyr Thr Leu Val
145                 150                 155                 160

gcc ttt gca tgg ttg gga gtt gtt cct ctt aca gca tgc cgc atc tac      528
Ala Phe Ala Trp Leu Gly Val Val Pro Leu Thr Ala Cys Arg Ile Tyr
                165                 170                 175

aag tgc ttg ttt act ggc tcc gtg agc tca cta ctg acg ctg cca tta      576
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Lys Cys Leu Phe Thr Gly Ser Val Ser Ser Leu Leu Thr Leu Pro Leu
            180                 185                 190

gat atg ctg tca acg gaa aat ttg ttg gca gat tgt ttg cag ggt tgt      624
Asp Met Leu Ser Thr Glu Asn Leu Leu Ala Asp Cys Leu Gln Gly Cys
        195                 200                 205

ttt gtg gtg acg tgc aca ctg tgt gca ttc atc agc ctg gtg tgg ttg      672
Phe Val Val Thr Cys Thr Leu Cys Ala Phe Ile Ser Leu Val Trp Leu
    210                 215                 220

aga gag cag ata gtc cat ggg gga gca cca att tgg ttg gag cat gct      720
Arg Glu Gln Ile Val His Gly Gly Ala Pro Ile Trp Leu Glu His Ala
225                 230                 235                 240

gcc cca ccg ttc aat gct gcg ggg cat cac caa aat gag gct cca gca      768
Ala Pro Pro Phe Asn Ala Ala Gly His His Gln Asn Glu Ala Pro Ala
                245                 250                 255

gga gga aat ggt gca gaa aat gtt gct gct gat cag cct gct aac cca      816
Gly Gly Asn Gly Ala Glu Asn Val Ala Ala Asp Gln Pro Ala Asn Pro
            260                 265                 270

cca gct gag aac gca gtg gtg ggg gaa aac cct gat gcc cag gat gac      864
Pro Ala Glu Asn Ala Val Val Gly Glu Asn Pro Asp Ala Gln Asp Asp
        275                 280                 285

cag gca gaa gag gag gag gag gac aat gag gag gaa gat gac gct ggt      912
Gln Ala Glu Glu Glu Glu Glu Asp Asn Glu Glu Glu Asp Asp Ala Gly
    290                 295                 300

gtg gag gat gcg gca gat gct aat aac gga gcc cag gat gac atg aat      960
Val Glu Asp Ala Ala Asp Ala Asn Asn Gly Ala Gln Asp Asp Met Asn
305                 310                 315                 320

tgg aat gct tta gaa tgg gac cga gct gct gaa gag ctt aca tgg gaa     1008
Trp Asn Ala Leu Glu Trp Asp Arg Ala Ala Glu Glu Leu Thr Trp Glu
                325                 330                 335

aga atg cta gga ctt gat gga tca cta gtt ttt ctg gaa cat gtc ttc     1056
Arg Met Leu Gly Leu Asp Gly Ser Leu Val Phe Leu Glu His Val Phe
            340                 345                 350

tgg gtg gta tct tta aat aca ctg ttc att ctt gtt ttt gca ttt tgc     1104
Trp Val Val Ser Leu Asn Thr Leu Phe Ile Leu Val Phe Ala Phe Cys
        355                 360                 365

cct tac cat att ggt cat ttc tcc ctt gtt ggt ttg gga ttt gaa gaa     1152
Pro Tyr His Ile Gly His Phe Ser Leu Val Gly Leu Gly Phe Glu Glu
    370                 375                 380

cac gtc caa gca tct cat ttt gaa ggc cta atc aca acc ata gtt ggg     1200
His Val Gln Ala Ser His Phe Glu Gly Leu Ile Thr Thr Ile Val Gly
385                 390                 395                 400

tat ata ctt tta gca ata aca ctg ata att tgt cat ggc ttg gca act     1248
Tyr Ile Leu Leu Ala Ile Thr Leu Ile Ile Cys His Gly Leu Ala Thr
                405                 410                 415
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ctt gtg aaa ttt cat aga tct cgt cgc tta ctg gga gtc tgc tat att     1296
Leu Val Lys Phe His Arg Ser Arg Arg Leu Leu Gly Val Cys Tyr Ile
            420                 425                 430

gtt gtt aag gtc tct ttg tta gtg gtg gta gaa att gga gta ttc cct     1344
Val Val Lys Val Ser Leu Leu Val Val Val Glu Ile Gly Val Phe Pro
        435                 440                 445

ctc att tgt ggt tgg tgg ctg gat atc tgt tcc ttg gaa atg ttt gat     1392
Leu Ile Cys Gly Trp Trp Leu Asp Ile Cys Ser Leu Glu Met Phe Asp
    450                 455                 460

gct act ctg aaa gat cga gaa ctg agc ttt cag tcg gct cca ggt act     1440
Ala Thr Leu Lys Asp Arg Glu Leu Ser Phe Gln Ser Ala Pro Gly Thr
465                 470                 475                 480

acc atg ttt ctg cat tgg cta gtg gga atg gta tat gtc ttc tac ttt     1488
Thr Met Phe Leu His Trp Leu Val Gly Met Val Tyr Val Phe Tyr Phe
                485                 490                 495

gcc tcc ttc att cta cta ctg aga gag gta ctt cga cct ggt gtc ctg     1536
Ala Ser Phe Ile Leu Leu Leu Arg Glu Val Leu Arg Pro Gly Val Leu
            500                 505                 510

tgg ttt cta agg aat ttg aat gat cca gat ttc aat cca gta cag gaa     1584
Trp Phe Leu Arg Asn Leu Asn Asp Pro Asp Phe Asn Pro Val Gln Glu
        515                 520                 525

atg atc cat ttg cca ata tat agg cat ctc cga aga ttt att ttg tca     1632
Met Ile His Leu Pro Ile Tyr Arg His Leu Arg Arg Phe Ile Leu Ser
    530                 535                 540

gtg att gtc ttt ggc tcc att gtc ctc ctg atg ctt tgg ctt cct ata     1680
Val Ile Val Phe Gly Ser Ile Val Leu Leu Met Leu Trp Leu Pro Ile
545                 550                 555                 560

cgt ata att aag agt gtg ctg cct aat ttt ctt cca tac aat gtc atg     1728
Arg Ile Ile Lys Ser Val Leu Pro Asn Phe Leu Pro Tyr Asn Val Met
                565                 570                 575

ctc tac agt gat gct cca gtg agt gaa ctg tcc ctc gag ctg ctt ctg     1776
Leu Tyr Ser Asp Ala Pro Val Ser Glu Leu Ser Leu Glu Leu Leu Leu
            580                 585                 590

ctt cag gtt gtc ttg cca gca tta ctc gaa cag gga cac acg agg cag     1824
Leu Gln Val Val Leu Pro Ala Leu Leu Glu Gln Gly His Thr Arg Gln
        595                 600                 605

tgg ctg aag ggg ctg gtg cga gcg tgg act gtg acc gcc gga tac ttg     1872
Trp Leu Lys Gly Leu Val Arg Ala Trp Thr Val Thr Ala Gly Tyr Leu
    610                 615                 620

ctg gat ctt cat tct tat tta ttg gga gac cag gaa gaa aat gaa aac     1920
Leu Asp Leu His Ser Tyr Leu Leu Gly Asp Gln Glu Glu Asn Glu Asn
625                 630                 635                 640

agt gca aat caa caa gtt aac aat aat cag cat gct cga aat aac aac     1968
Ser Ala Asn Gln Gln Val Asn Asn Asn Gln His Ala Arg Asn Asn Asn
                645                 650                 655
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gct att cct gtg gtg gga gaa ggc ctt cat gca gcc cac caa gcc ata     2016
Ala Ile Pro Val Val Gly Glu Gly Leu His Ala Ala His Gln Ala Ile
            660                 665                 670

ctc cag cag gga ggg cct gtt ggc ttt cag cct tac cgc cga cct tta     2064
Leu Gln Gln Gly Gly Pro Val Gly Phe Gln Pro Tyr Arg Arg Pro Leu
        675                 680                 685

aat ttt cca ctc agg ata ttt ctg ttg att gtc ttc atg tgt ata aca     2112
Asn Phe Pro Leu Arg Ile Phe Leu Leu Ile Val Phe Met Cys Ile Thr
    690                 695                 700

tta ctg att gcc agc ctc atc tgc ctt act tta cca gta ttt gct ggc     2160
Leu Leu Ile Ala Ser Leu Ile Cys Leu Thr Leu Pro Val Phe Ala Gly
705                 710                 715                 720

cgt tgg tta atg tcg ttt tgg acg ggg act gcc aaa atc cat gag ctc     2208
Arg Trp Leu Met Ser Phe Trp Thr Gly Thr Ala Lys Ile His Glu Leu
                725                 730                 735

tac aca gct gct tgt ggt ctc tat gtt tgc tgg cta acc ata agg gct     2256
Tyr Thr Ala Ala Cys Gly Leu Tyr Val Cys Trp Leu Thr Ile Arg Ala
            740                 745                 750

gtg acg gtg atg gtg gca tgg atg cct cag gga cgc aga gtg atc ttc     2304
Val Thr Val Met Val Ala Trp Met Pro Gln Gly Arg Arg Val Ile Phe
        755                 760                 765

cag aag gtt aaa gag tgg tct ctc atg atc atg aag act ttg ata gtt     2352
Gln Lys Val Lys Glu Trp Ser Leu Met Ile Met Lys Thr Leu Ile Val
    770                 775                 780

gcg gtg ctg ttg gct gga gtt gtc cct ctc ctt ctg ggg ctc ctg ttt     2400
Ala Val Leu Leu Ala Gly Val Val Pro Leu Leu Leu Gly Leu Leu Phe
785                 790                 795                 800

gag ctg gtc att gtg gct ccc ctg agg gtt ccc ttg gat cag act cct     2448
Glu Leu Val Ile Val Ala Pro Leu Arg Val Pro Leu Asp Gln Thr Pro
                805                 810                 815

ctt ttt tat cca tgg cag gac tgg gca ctt gga gtc ctg cat gcc aaa     2496
Leu Phe Tyr Pro Trp Gln Asp Trp Ala Leu Gly Val Leu His Ala Lys
            820                 825                 830

atc att gca gct ata aca ttg atg ggt cct cag tgg tgg ttg aaa act     2544
Ile Ile Ala Ala Ile Thr Leu Met Gly Pro Gln Trp Trp Leu Lys Thr
        835                 840                 845

gta att gaa cag gtt tac gca aat ggc atc cgg aac att gac ctt cac     2592
Val Ile Glu Gln Val Tyr Ala Asn Gly Ile Arg Asn Ile Asp Leu His
    850                 855                 860

tat att gtt cgt aaa ctg gca gct ccc gtg atc tct gtg ctg ttg ctt     2640
Tyr Ile Val Arg Lys Leu Ala Ala Pro Val Ile Ser Val Leu Leu Leu
865                 870                 875                 880

tcc ctg tgt gta cct tat gtc ata gct tct ggt gtt gtt cct tta cta     2688
Ser Leu Cys Val Pro Tyr Val Ile Ala Ser Gly Val Val Pro Leu Leu
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                885                 890                 895

ggt gtt act gcg gaa atg caa aac tta gtc cat cgg cgg att tat cca     2736
Gly Val Thr Ala Glu Met Gln Asn Leu Val His Arg Arg Ile Tyr Pro
            900                 905                 910

ttt tta ctg atg gtc gtg gta ttg atg gca att ttg tcc ttc caa gtc     2784
Phe Leu Leu Met Val Val Val Leu Met Ala Ile Leu Ser Phe Gln Val
        915                 920                 925

cgc cag ttt aag cgc ctt tat gaa cat att aaa aat gac aag tac ctt     2832
Arg Gln Phe Lys Arg Leu Tyr Glu His Ile Lys Asn Asp Lys Tyr Leu
    930                 935                 940

gtg ggt caa cga ctc gtg aac tac gaa cgg aaa tct ggc aaa caa ggc     2880
Val Gly Gln Arg Leu Val Asn Tyr Glu Arg Lys Ser Gly Lys Gln Gly
945                 950                 955                 960

tca tct cca cca cct cca cag tca tcc caa gaa taa agtagttgtc          2926
Ser Ser Pro Pro Pro Pro Gln Ser Ser Gln Glu
                965                 970

tcaacaactt gaccttcccc tttacatgtc ctttttgtg gacttctctc tttggagatt   2986

tttcccagtg atctctcagc gttgttttta agttaaatgt atttgacttg tgttctcagc   3046

attcagagag cagcggtgta agattctgct gttctccctg gatcttctga cattactgct   3106

gtctgagatt tgtatatgtg taaatacaag ttccttgata ccctaaaacc ttggattaaa   3166

cagaatgtgc attgtacatc tttaaacaaa atgtatatta atttattaaa tctagttgtc   3226

actttatttt ggacctgctg tgatctcgac aggaaacgtg ccacagagca gtagtgcgca   3286

ggcaagactt ttcagtgacg ccttgtggaa cgcagttcat gatgtcctag cagctctcac   3346

taagggaact gtacattctt tctttcttgg ctattcagac cttaccaaga acgttaaagg   3406

aaacaagtag aaatcagcag tggagtgtct gtggtaagaa aacatgaact ttatgcttca   3466

ctgttagttg tttgtggaag ttattttgta taacaccaaa gctgttgtac atttcctact   3526

gcctgatttt tttcatgtgt ctgtgtttgt aatattgtat agtatcttgt gctaggtgag   3586

gaaattattt ttaattttga taatttaata ttcctagtgt gatcagcatt gggagttggg   3646

tttcagtggg gcatgtctat acttagagaa aaaaagtcca aatgaagatt ttcatgagtc   3706

agccccccg cccgccccca ccccacaccc acatcctctc ttttccacac acaactatct   3766

gtttatttt tgtagcagtg gccgaaagtc ctgcaaggtc ataaatcttt cagagtgaca   3826

tcaccaactg tactgcatct tactggattt aggacttctg agatgcttgt gaagtataga   3886

tgtggttgtg gtcttagatt gacagcatta gagaagactg gttagaacat ctggtctcgc   3946

tggttagtgc ctcgttggct gaggactagg tgtgcatttc tcctagcttt tcatcaggaa   4006

atcccaaagt ttccaaagct ttttgtttac agaataaaac ttcaaataaa accaattcat   4066
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tatttgtcca gaaggaagct tggctgagct ggcctttaa cataggaatg tatttcgttg 4126

gaaacattct gaaaaatctc agagaactga acccttacaa actttgtttt ccctcataac 4186

caaagcttca ggttagaagt ttagaaaaat agaatggttg ggtacatgat ctaaatgttt 4246

aatgctaaag gtatatcgta agggtagtgt ttgtttttga acgataattt agaagttctc 4306

atagaaagcg tataacatag gtcttcagaa actataaaag aattttcata tagtattaaa 4366

atccatagac taaaatctga gaatttttta acatatgcaa gtcagccaaa cataagctac 4426

caaaataaag agcaatgtgt tctggctgtt ttatacttca acaatttttt ccctaagtgg 4486

taagcaatta ctttaaaaca tatttttaaa aacatcggta tcgggagctg cggtggctcc 4546

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attgg 4611

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Val Ser Leu Ala Phe Cys Gln Pro Leu Ser Leu Ser Leu Ser Pro Leu
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Leu Pro Leu Ala Ser Ser Leu Ala Pro Glu Arg Thr His Leu Pro Gly
20 25 30

Pro Gly Ser Leu Leu Leu Ser Pro Pro Ser Phe Pro Ala Arg Pro Arg
35 40 45

Glu Pro Arg Gly Cys Val Thr Ala Ala Pro Pro Asp Lys Met Asp Thr
50 55 60

Ala Glu Glu Asp Ile Cys Arg Val Cys Arg Ser Glu Gly Thr Pro Glu
65 70 75 80

Lys Pro Leu Tyr His Pro Cys Val Cys Thr Gly Ser Ile Lys Phe Ile
85 90 95

His Gln Glu Cys Leu Val Gln Trp Leu Lys His Ser Arg Lys Glu Tyr
100 105 110

Cys Glu Leu Cys Lys His Arg Phe Ala Phe Thr Pro Ile Tyr Ser Pro
115 120 125

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Asp Met Pro Ser Arg Leu Pro Ile Gln Asp Ile Phe Ala Gly Leu Val
    130                 135                 140

Thr Ser Ile Gly Thr Ala Ile Arg Tyr Trp Phe His Tyr Thr Leu Val
145                 150                 155                 160

Ala Phe Ala Trp Leu Gly Val Val Pro Leu Thr Ala Cys Arg Ile Tyr
                165                 170                 175

Lys Cys Leu Phe Thr Gly Ser Val Ser Ser Leu Leu Thr Leu Pro Leu
            180                 185                 190

Asp Met Leu Ser Thr Glu Asn Leu Leu Ala Asp Cys Leu Gln Gly Cys
        195                 200                 205

Phe Val Val Thr Cys Thr Leu Cys Ala Phe Ile Ser Leu Val Trp Leu
    210                 215                 220

Arg Glu Gln Ile Val His Gly Gly Ala Pro Ile Trp Leu Glu His Ala
225                 230                 235                 240

Ala Pro Pro Phe Asn Ala Ala Gly His His Gln Asn Glu Ala Pro Ala
                245                 250                 255

Gly Gly Asn Gly Ala Glu Asn Val Ala Ala Asp Gln Pro Ala Asn Pro
            260                 265                 270

Pro Ala Glu Asn Ala Val Val Gly Glu Asn Pro Asp Ala Gln Asp Asp
        275                 280                 285

Gln Ala Glu Glu Glu Glu Glu Asp Asn Glu Glu Glu Asp Asp Ala Gly
    290                 295                 300

Val Glu Asp Ala Ala Asp Ala Asn Asn Gly Ala Gln Asp Asp Met Asn
305                 310                 315                 320

Trp Asn Ala Leu Glu Trp Asp Arg Ala Ala Glu Glu Leu Thr Trp Glu
                325                 330                 335

Arg Met Leu Gly Leu Asp Gly Ser Leu Val Phe Leu Glu His Val Phe
            340                 345                 350

Trp Val Val Ser Leu Asn Thr Leu Phe Ile Leu Val Phe Ala Phe Cys
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355 360 365

Pro Tyr His Ile Gly His Phe Ser Leu Val Gly Leu Gly Phe Glu Glu
370 375 380

His Val Gln Ala Ser His Phe Glu Gly Leu Ile Thr Thr Ile Val Gly
385 390 395 400

Tyr Ile Leu Leu Ala Ile Thr Leu Ile Ile Cys His Gly Leu Ala Thr
405 410 415

Leu Val Lys Phe His Arg Ser Arg Arg Leu Leu Gly Val Cys Tyr Ile
420 425 430

Val Val Lys Val Ser Leu Leu Val Val Val Glu Ile Gly Val Phe Pro
435 440 445

Leu Ile Cys Gly Trp Trp Leu Asp Ile Cys Ser Leu Glu Met Phe Asp
450 455 460

Ala Thr Leu Lys Asp Arg Glu Leu Ser Phe Gln Ser Ala Pro Gly Thr
465 470 475 480

Thr Met Phe Leu His Trp Leu Val Gly Met Val Tyr Val Phe Tyr Phe
485 490 495

Ala Ser Phe Ile Leu Leu Leu Arg Glu Val Leu Arg Pro Gly Val Leu
500 505 510

Trp Phe Leu Arg Asn Leu Asn Asp Pro Asp Phe Asn Pro Val Gln Glu
515 520 525

Met Ile His Leu Pro Ile Tyr Arg His Leu Arg Arg Phe Ile Leu Ser
530 535 540

Val Ile Val Phe Gly Ser Ile Val Leu Leu Met Leu Trp Leu Pro Ile
545 550 555 560

Arg Ile Ile Lys Ser Val Leu Pro Asn Phe Leu Pro Tyr Asn Val Met
565 570 575

Leu Tyr Ser Asp Ala Pro Val Ser Glu Leu Ser Leu Glu Leu Leu Leu
580 585 590

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Leu Gln Val Val Leu Pro Ala Leu Leu Glu Gln Gly His Thr Arg Gln
        595                 600                 605

Trp Leu Lys Gly Leu Val Arg Ala Trp Thr Val Thr Ala Gly Tyr Leu
    610                 615                 620

Leu Asp Leu His Ser Tyr Leu Leu Gly Asp Gln Glu Glu Asn Glu Asn
625                 630                 635                 640

Ser Ala Asn Gln Gln Val Asn Asn Asn Gln His Ala Arg Asn Asn Asn
                645                 650                 655

Ala Ile Pro Val Val Gly Glu Gly Leu His Ala Ala His Gln Ala Ile
            660                 665                 670

Leu Gln Gln Gly Gly Pro Val Gly Phe Gln Pro Tyr Arg Arg Pro Leu
        675                 680                 685

Asn Phe Pro Leu Arg Ile Phe Leu Leu Ile Val Phe Met Cys Ile Thr
    690                 695                 700

Leu Leu Ile Ala Ser Leu Ile Cys Leu Thr Leu Pro Val Phe Ala Gly
705                 710                 715                 720

Arg Trp Leu Met Ser Phe Trp Thr Gly Thr Ala Lys Ile His Glu Leu
                725                 730                 735

Tyr Thr Ala Ala Cys Gly Leu Tyr Val Cys Trp Leu Thr Ile Arg Ala
            740                 745                 750

Val Thr Val Met Val Ala Trp Met Pro Gln Gly Arg Arg Val Ile Phe
        755                 760                 765

Gln Lys Val Lys Glu Trp Ser Leu Met Ile Met Lys Thr Leu Ile Val
    770                 775                 780

Ala Val Leu Leu Ala Gly Val Val Pro Leu Leu Leu Gly Leu Leu Phe
785                 790                 795                 800

Glu Leu Val Ile Val Ala Pro Leu Arg Val Pro Leu Asp Gln Thr Pro
                805                 810                 815

Leu Phe Tyr Pro Trp Gln Asp Trp Ala Leu Gly Val Leu His Ala Lys
            820                 825                 830
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Ile Ile Ala Ala Ile Thr Leu Met Gly Pro Gln Trp Trp Leu Lys Thr
        835                 840                 845

Val Ile Glu Gln Val Tyr Ala Asn Gly Ile Arg Asn Ile Asp Leu His
    850                 855                 860

Tyr Ile Val Arg Lys Leu Ala Ala Pro Val Ile Ser Val Leu Leu Leu
865                 870                 875                 880

Ser Leu Cys Val Pro Tyr Val Ile Ala Ser Gly Val Val Pro Leu Leu
                885                 890                 895

Gly Val Thr Ala Glu Met Gln Asn Leu Val His Arg Arg Ile Tyr Pro
            900                 905                 910

Phe Leu Leu Met Val Val Val Leu Met Ala Ile Leu Ser Phe Gln Val
        915                 920                 925

Arg Gln Phe Lys Arg Leu Tyr Glu His Ile Lys Asn Asp Lys Tyr Leu
    930                 935                 940

Val Gly Gln Arg Leu Val Asn Tyr Glu Arg Lys Ser Gly Lys Gln Gly
945                 950                 955                 960

Ser Ser Pro Pro Pro Pro Gln Ser Ser Gln Glu
                965                 970


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<400>  50
cct ggt tcc tta ttc cgg ttt gca gtc ccc cca gca ctt ggg agt aat       48
Pro Gly Ser Leu Phe Arg Phe Ala Val Pro Pro Ala Leu Gly Ser Asn
1               5                   10                  15

ttg acc gac aat gtc atg atc aca gta gat att att cct tca ggt tgg       96
Leu Thr Asp Asn Val Met Ile Thr Val Asp Ile Ile Pro Ser Gly Trp
            20                  25                  30

aat tca gct gat ggt aaa agt gat aaa act aaa agt gcg cct tca aga      144
Asn Ser Ala Asp Gly Lys Ser Asp Lys Thr Lys Ser Ala Pro Ser Arg
        35                  40                  45
```

```
gat cca gaa aga ttg cag aaa ata aaa gag agc ctc ctt tta gag gac      192
Asp Pro Glu Arg Leu Gln Lys Ile Lys Glu Ser Leu Leu Leu Glu Asp
    50                  55                  60

tca gaa gaa gaa gaa ggt gac tta tgt aga att tgt caa atg gca gct      240
Ser Glu Glu Glu Glu Gly Asp Leu Cys Arg Ile Cys Gln Met Ala Ala
65                  70                  75                  80

gca tca tca tct aat ttg ctg ata gag cca tgc aag tgc aca gga agt      288
Ala Ser Ser Ser Asn Leu Leu Ile Glu Pro Cys Lys Cys Thr Gly Ser
                85                  90                  95

ttg cag tat gtc cac caa gac tgt atg aaa aag tgg tta cag gcc aaa      336
Leu Gln Tyr Val His Gln Asp Cys Met Lys Lys Trp Leu Gln Ala Lys
            100                 105                 110

att aac tct ggt tct tca tta gaa gct gta acc acc tgt gaa cta tgt      384
Ile Asn Ser Gly Ser Ser Leu Glu Ala Val Thr Thr Cys Glu Leu Cys
        115                 120                 125

aaa gag aag ttg gag ctt aac ctg gag gat ttt gat att cat gaa cta      432
Lys Glu Lys Leu Glu Leu Asn Leu Glu Asp Phe Asp Ile His Glu Leu
    130                 135                 140

cat aga gct cat gca aat gaa caa gct gag tat gag ttt atc agc tct      480
His Arg Ala His Ala Asn Glu Gln Ala Glu Tyr Glu Phe Ile Ser Ser
145                 150                 155                 160

ggt ctc tac cta gtg gtg tta ttg cac ttg tgc gaa caa agc ttt tct      528
Gly Leu Tyr Leu Val Val Leu Leu His Leu Cys Glu Gln Ser Phe Ser
                165                 170                 175

gat atg atg gga aat aca aat gaa cca agc aca cgt gtc cga ttt att      576
Asp Met Met Gly Asn Thr Asn Glu Pro Ser Thr Arg Val Arg Phe Ile
            180                 185                 190

aac ctt gca aga act ctt cag gca cat atg gaa gat ctc gaa act tca      624
Asn Leu Ala Arg Thr Leu Gln Ala His Met Glu Asp Leu Glu Thr Ser
        195                 200                 205

gag gat gat tcc gaa gaa gac gga gac cat aac agg aca ttt gat att      672
Glu Asp Asp Ser Glu Glu Asp Gly Asp His Asn Arg Thr Phe Asp Ile
    210                 215                 220

gcc taa cttcatataa gacagatgga tgatctgtga acataagtgt ttattaaaaa      728
Ala
225

tggcaattaa atataaatta cttttgtggg ggaatgccta ataaatacat tgactatata    788

taaaatgaat atatacatac acatgtatgc ctgtatatat atattcattc tccagtgttg    848

ctgaattaaa attctgctgg actttttaac atagcaaatc cgatgtttat aaactggtaa    908

tcaaaaaggt tttttctttt aggtgagtgg gaaagtatta cccttgtttt aaatatctaa    968

gcaatgccta tcaacccttt tttgtgttat gattactgta gtcatattta tgaaaaaagg   1028
```

tttgtgtttt actcttgcta gtgagaaaag tgggacaaaa tatacttttg aaataaaatg 1088

ctatatggca cctaattatt ttttctttta aaatgcctta agttgcagtc tcattttgat 1148

aatcatttgc ttccagtgtt taaaaattaa aaaaagaatg gggagaaggt tatgagaaga 1208

gcattattaa gtttccaaat ttaatttgaa ttccaaattc acctagcaat aaaatctaat 1268

ttttaaaaag tatataaata taaaatgtat aaatgatgga tagatttttg tattgatttg 1328

caaaatgcag attatatttg ataggctata gtatgtagat attcctttta ggaatattac 1388

agctgtaaat tatatgagac ttgccagtca aatgctattt ggtttaaaaa aattattgca 1448

atctcaagtt aatggaatat ttttaaatcc cacattcaga gtttaaaaca ctggttttca 1508

atgtgttttt tagtgttgtc acttgtttat agataaatat ataaataacc tgtttggatc 1568

ctggtccttt ttaactgttc cttggtaatt ctgagcattt atttgatgac ttaatatttt 1628

tcactacctt tggagaacag atgaacatta ttcaccatga atggatctat actgtgtggt 1688

catgagttgt gtatacttcc ataacactgt atttttcttc tgtcagtacc cttaggatac 1748

actttaaaac accttaaggt ctgatgttat ggcaacaaac tacttttca aacctaaata 1808

ggaaccatgt aatttctcaa aagtgattga acagtttgcc cacacttagt ttgttggtct 1868

tatgtaaaac attggctcaa aataaagtac acactgattt aaaaaaaaaa aaaaaaa 1925

<210> 51
<211> 225
<212> PRT
<213> Homo sapiens

<400> 51

Pro Gly Ser Leu Phe Arg Phe Ala Val Pro Pro Ala Leu Gly Ser Asn
1 5 10 15

Leu Thr Asp Asn Val Met Ile Thr Val Asp Ile Ile Pro Ser Gly Trp
20 25 30

Asn Ser Ala Asp Gly Lys Ser Asp Lys Thr Lys Ser Ala Pro Ser Arg
35 40 45

Asp Pro Glu Arg Leu Gln Lys Ile Lys Glu Ser Leu Leu Leu Glu Asp
50 55 60

Ser Glu Glu Glu Glu Gly Asp Leu Cys Arg Ile Cys Gln Met Ala Ala
65 70 75 80

Ala Ser Ser Ser Asn Leu Leu Ile Glu Pro Cys Lys Cys Thr Gly Ser

85 90 95

Leu Gln Tyr Val His Gln Asp Cys Met Lys Lys Trp Leu Gln Ala Lys
100 105 110

Ile Asn Ser Gly Ser Ser Leu Glu Ala Val Thr Thr Cys Glu Leu Cys
115 120 125

Lys Glu Lys Leu Glu Leu Asn Leu Glu Asp Phe Asp Ile His Glu Leu
130 135 140

His Arg Ala His Ala Asn Glu Gln Ala Glu Tyr Glu Phe Ile Ser Ser
145 150 155 160

Gly Leu Tyr Leu Val Val Leu Leu His Leu Cys Glu Gln Ser Phe Ser
165 170 175

Asp Met Met Gly Asn Thr Asn Glu Pro Ser Thr Arg Val Arg Phe Ile
180 185 190

Asn Leu Ala Arg Thr Leu Gln Ala His Met Glu Asp Leu Glu Thr Ser
195 200 205

Glu Asp Asp Ser Glu Glu Asp Gly Asp His Asn Arg Thr Phe Asp Ile
210 215 220

Ala
225

<210> 52
<211> 1863
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (245)..(1120)

<400> 52
agcggatggt aggtataggg ctgtggatat cgtcagtttg accaagtatt ccaagaggcc 60

ccatggagtt tgtcatctgt aatagaggac gttagtgcat tagtgatgaa aaaactgctt 120

accactgact attgtgatct cccagggagt ataaggcagc tccgcacttg aaatccatgg 180

cccaaaatga ctctaccagt ggagactctc ttctgtgaag aagacgacca gataagaggt 240

tggg atg agc atg cca ctg cat cag atc tct gcc att cca tcc cag gat 289

```
     Met Ser Met Pro Leu His Gln Ile Ser Ala Ile Pro Ser Gln Asp
     1               5                  10                  15

gcc atc tct gct aga gtc tac aga agt aag acc aaa gaa aag gag agg      337
Ala Ile Ser Ala Arg Val Tyr Arg Ser Lys Thr Lys Glu Lys Glu Arg
                20                  25                  30

gaa gaa cag aat gag aag act ttg gga cat ttc atg agt cat tca agc      385
Glu Glu Gln Asn Glu Lys Thr Leu Gly His Phe Met Ser His Ser Ser
            35                  40                  45

aac att tct aag gct ggg agt cct ccg tca gca tca gct ccg gct ccg      433
Asn Ile Ser Lys Ala Gly Ser Pro Pro Ser Ala Ser Ala Pro Ala Pro
        50                  55                  60

gtg tcc tcc ttc tct cgc act tct atc acg cca tcc agc cag gac atc      481
Val Ser Ser Phe Ser Arg Thr Ser Ile Thr Pro Ser Ser Gln Asp Ile
    65                  70                  75

tgc agg atc tgc cac tgt gaa gga gat gat gag agc ccc ctg atc acc      529
Cys Arg Ile Cys His Cys Glu Gly Asp Asp Glu Ser Pro Leu Ile Thr
80                  85                  90                  95

ccc tgc cac tgc aca gga agc ctc cac ttc gtg cac cag gcc tgc ctg      577
Pro Cys His Cys Thr Gly Ser Leu His Phe Val His Gln Ala Cys Leu
                100                 105                 110

cag cag tgg atc aag agc tcc gac acg cgc tgc tgc gag ctc tgc aag      625
Gln Gln Trp Ile Lys Ser Ser Asp Thr Arg Cys Cys Glu Leu Cys Lys
            115                 120                 125

tat gag ttc atc atg gag acc aag ctg aag cca ctg aga aaa tgg gag      673
Tyr Glu Phe Ile Met Glu Thr Lys Leu Lys Pro Leu Arg Lys Trp Glu
        130                 135                 140

aag ttg cag atg acg tcc agc gag cgc agg aag atc atg tgc tca gtg      721
Lys Leu Gln Met Thr Ser Ser Glu Arg Arg Lys Ile Met Cys Ser Val
    145                 150                 155

aca ttc cac gtc att gcc atc aca tgt gtg gtc tgg tcc ttg tat gtg      769
Thr Phe His Val Ile Ala Ile Thr Cys Val Val Trp Ser Leu Tyr Val
160                 165                 170                 175

ctc att gac cgt act gct gag gag atc aag cag ggg cag gca aca gga      817
Leu Ile Asp Arg Thr Ala Glu Glu Ile Lys Gln Gly Gln Ala Thr Gly
                180                 185                 190

atc cta gaa tgg ccc ttt tgg act aaa ttg gtg gtt gtg gcc atc ggc      865
Ile Leu Glu Trp Pro Phe Trp Thr Lys Leu Val Val Val Ala Ile Gly
            195                 200                 205

ttc acc gga gga ctt ctt ttt atg tat gtt cag tgt aaa gtg tat gtg      913
Phe Thr Gly Gly Leu Leu Phe Met Tyr Val Gln Cys Lys Val Tyr Val
        210                 215                 220

caa ttg tgg aag aga ctc aag gcc tat aat aga gtg atc tat gtt caa      961
Gln Leu Trp Lys Arg Leu Lys Ala Tyr Asn Arg Val Ile Tyr Val Gln
    225                 230                 235
```

```
aac tgt cca gaa aca agc aaa aag aat att ttt gaa aaa tct cca cta     1009
Asn Cys Pro Glu Thr Ser Lys Lys Asn Ile Phe Glu Lys Ser Pro Leu
240                 245                 250                 255

aca gag ccc aac ttt gaa aat aaa cat gga cat gga atc tgt cat tcc     1057
Thr Glu Pro Asn Phe Glu Asn Lys His Gly His Gly Ile Cys His Ser
                260                 265                 270

gac aca aac tct tct tgt tgc aca gag cct gaa gac act gga gca gaa     1105
Asp Thr Asn Ser Ser Cys Cys Thr Glu Pro Glu Asp Thr Gly Ala Glu
            275                 280                 285

atc att cac gtc tga ttgtgtgcgg gttgtcattt tcctggacat ccatgaagag     1160
Ile Ile His Val
        290

ctgaaggaaa ttgtttactg ccaattgtat acctttctta tgtcctttaa tagcatagac   1220

tggacaggtg actatttata gtggcttctc tttttctaaa ccctccttag tctcctagaa   1280

aaccttcctg tgggccaggc atgcctgggt cctgcctctg cctggcagct ctgtgggaaa   1340

gtggaagacc ccatgatgac atcatgggga gccagcagag ttcctgccca tggtcttgag   1400

ctgaatgaga gaataaaatg ccaatcccaa gggaagagga ggagcagggg tgcccaggcc   1460

ctgataccca gccgcctcca gcttgcagtg gtccccagcc tggagcagag cattggggag   1520

tgtctagcca tgacgagaag attccctctg catcacggcg aaccccagga gatggtattg   1580

aaacagaccc ccaaacacag actcctgcct gccctctgcc gatgctgcct cctccatgct   1640

cttgagcagg tggagccatg gtgctctgtg gtggcgcatg attcactgag caaacagcac   1700

tttacagaag aaaatcttta ttttgtaata tgtgtgtcca gcgggattga cactcaaaaa   1760

aagtctcact tagaaatctt cccttcctta cctttgtatc tcctttacat catgagagat   1820

caaaaatcca ttttgcctta catatgcaaa aaaaaaaaaa aaa                     1863
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<210> 53
<211> 291
<212> PRT
<213> Homo sapiens

<400> 53

```
Met Ser Met Pro Leu His Gln Ile Ser Ala Ile Pro Ser Gln Asp Ala
1               5                   10                  15

Ile Ser Ala Arg Val Tyr Arg Ser Lys Thr Lys Glu Lys Glu Arg Glu
            20                  25                  30

Glu Gln Asn Glu Lys Thr Leu Gly His Phe Met Ser His Ser Ser Asn
        35                  40                  45
```

```
Ile Ser Lys Ala Gly Ser Pro Pro Ser Ala Ser Ala Pro Ala Pro Val
    50                  55                  60

Ser Ser Phe Ser Arg Thr Ser Ile Thr Pro Ser Ser Gln Asp Ile Cys
65                  70                  75                  80

Arg Ile Cys His Cys Glu Gly Asp Asp Glu Ser Pro Leu Ile Thr Pro
                85                  90                  95

Cys His Cys Thr Gly Ser Leu His Phe Val His Gln Ala Cys Leu Gln
            100                 105                 110

Gln Trp Ile Lys Ser Ser Asp Thr Arg Cys Cys Glu Leu Cys Lys Tyr
        115                 120                 125

Glu Phe Ile Met Glu Thr Lys Leu Lys Pro Leu Arg Lys Trp Glu Lys
    130                 135                 140

Leu Gln Met Thr Ser Ser Glu Arg Arg Lys Ile Met Cys Ser Val Thr
145                 150                 155                 160

Phe His Val Ile Ala Ile Thr Cys Val Val Trp Ser Leu Tyr Val Leu
                165                 170                 175

Ile Asp Arg Thr Ala Glu Glu Ile Lys Gln Gly Gln Ala Thr Gly Ile
            180                 185                 190

Leu Glu Trp Pro Phe Trp Thr Lys Leu Val Val Val Ala Ile Gly Phe
        195                 200                 205

Thr Gly Gly Leu Leu Phe Met Tyr Val Gln Cys Lys Val Tyr Val Gln
    210                 215                 220

Leu Trp Lys Arg Leu Lys Ala Tyr Asn Arg Val Ile Tyr Val Gln Asn
225                 230                 235                 240

Cys Pro Glu Thr Ser Lys Lys Asn Ile Phe Glu Lys Ser Pro Leu Thr
                245                 250                 255

Glu Pro Asn Phe Glu Asn Lys His Gly His Gly Ile Cys His Ser Asp
            260                 265                 270

Thr Asn Ser Ser Cys Cys Thr Glu Pro Glu Asp Thr Gly Ala Glu Ile
        275                 280                 285
```

Ile His Val
290

<210> 54
<211> 272
<212> PRT
<213> Homo sapiens

<400> 54

Met Thr Ser Ser His Val Cys Cys Asn Phe Leu Asn Met Trp Lys Lys
1 5 10 15

Ser Lys Ile Ser Thr Met Tyr Tyr Leu Asn Gln Asp Ala Lys Leu Ser
20 25 30

Asn Leu Phe Leu Gln Ala Ser Ser Pro Thr Thr Gly Thr Ala Pro Arg
35 40 45

Ser Gln Ser Arg Leu Ser Val Cys Pro Ser Thr Gln Asp Ile Cys Arg
50 55 60

Ile Cys His Cys Glu Gly Asp Glu Glu Ser Pro Leu Ile Thr Pro Cys
65 70 75 80

Arg Cys Thr Gly Thr Leu Arg Phe Val His Gln Ser Cys Leu His Gln
85 90 95

Trp Ile Lys Ser Ser Asp Thr Arg Cys Cys Glu Leu Cys Lys Tyr Asp
100 105 110

Phe Ile Met Glu Thr Lys Leu Lys Pro Leu Arg Lys Trp Glu Lys Leu
115 120 125

Gln Met Thr Thr Ser Glu Arg Arg Lys Ile Phe Cys Ser Val Thr Phe
130 135 140

His Val Ile Ala Ile Thr Cys Val Val Trp Ser Leu Tyr Val Leu Ile
145 150 155 160

Asp Arg Thr Ala Glu Glu Ile Lys Gln Gly Asn Asp Asn Gly Val Leu
165 170 175

Glu Trp Pro Phe Trp Thr Lys Leu Val Val Val Ala Ile Gly Phe Thr
180 185 190

```
Gly Gly Leu Val Phe Met Tyr Val Gln Cys Lys Val Tyr Val Gln Leu
        195                 200                 205

Trp Arg Arg Leu Lys Ala Tyr Asn Arg Val Ile Phe Val Gln Asn Cys
    210                 215                 220

Pro Asp Thr Ala Lys Lys Leu Glu Lys Asn Phe Ser Cys Asn Val Asn
225                 230                 235                 240

Thr Asp Ile Lys Asp Ala Val Val Val Pro Val Pro Gln Thr Gly Ala
                245                 250                 255

Asn Ser Leu Pro Ser Ala Glu Gly Gly Pro Pro Glu Val Val Ser Val
            260                 265                 270


<210>  55
<211>  25
<212>  PRT
<213>  Homo sapiens

<400>  55

Met Glu Glu Pro Gln Ser Asp Pro Ser Val Glu Pro Pro Leu Ser Gln
1               5                   10                  15

Glu Thr Phe Ser Asp Leu Trp Lys Leu
            20                  25


<210>  56
<211>  253
<212>  PRT
<213>  Homo sapiens

<400>  56

Met Thr Thr Ser Arg Cys Ser His Leu Pro Glu Val Leu Pro Asp Cys
1               5                   10                  15

Thr Ser Ser Ala Ala Pro Val Val Lys Thr Val Glu Asp Cys Gly Ser
            20                  25                  30

Leu Val Asn Gly Gln Pro Gln Tyr Val Met Gln Val Ser Ala Lys Asp
        35                  40                  45

Gly Gln Leu Leu Ser Thr Val Val Arg Thr Leu Ala Thr Gln Ser Pro
    50                  55                  60
```

```
Phe Asn Asp Arg Pro Met Cys Arg Ile Cys His Glu Gly Ser Ser Gln
65                  70                  75                  80

Glu Asp Leu Leu Ser Pro Cys Glu Cys Thr Gly Thr Leu Gly Thr Ile
                85                  90                  95

His Arg Ser Cys Leu Glu His Trp Leu Ser Ser Ser Asn Thr Ser Tyr
            100                 105                 110

Cys Glu Leu Cys His Phe Arg Phe Ala Val Glu Arg Lys Pro Arg Pro
        115                 120                 125

Leu Val Glu Trp Leu Arg Asn Pro Gly Pro Gln His Glu Lys Arg Thr
    130                 135                 140

Leu Phe Gly Asp Met Val Cys Phe Leu Phe Ile Thr Pro Leu Ala Thr
145                 150                 155                 160

Ile Ser Gly Trp Leu Cys Leu Arg Gly Ala Val Asp His Leu His Phe
                165                 170                 175

Ser Ser Arg Leu Glu Ala Val Gly Leu Ile Ala Leu Thr Val Ala Leu
            180                 185                 190

Phe Thr Ile Tyr Leu Phe Trp Thr Leu Val Ser Phe Arg Tyr His Cys
        195                 200                 205

Arg Leu Tyr Asn Glu Trp Arg Arg Thr Asn Gln Arg Val Ile Leu Leu
    210                 215                 220

Ile Pro Lys Ser Val Asn Val Pro Ser Asn Gln Pro Ser Leu Leu Gly
225                 230                 235                 240

Leu His Ser Val Lys Arg Asn Ser Lys Glu Thr Val Val
                245                 250


<210>  57
<211>  410
<212>  PRT
<213>  Homo sapiens

<400>  57

Met Leu Met Pro Leu Cys Gly Leu Leu Trp Trp Trp Trp Cys Cys Cys
1               5                   10                  15
```

```
Ser Gly Trp Tyr Cys Tyr Gly Leu Cys Ala Pro Ala Pro Gln Met Leu
            20                  25                  30

Arg His Gln Gly Leu Leu Lys Cys Arg Cys Arg Met Leu Phe Asn Asp
        35                  40                  45

Leu Lys Val Phe Leu Leu Arg Arg Pro Pro Gln Ala Pro Leu Pro Met
    50                  55                  60

His Gly Asp Pro Gln Pro Pro Gly Leu Ala Ala Asn Asn Thr Leu Pro
65                  70                  75                  80

Ala Leu Gly Ala Gly Gly Trp Ala Gly Trp Arg Gly Pro Arg Glu Val
                85                  90                  95

Val Gly Arg Glu Pro Pro Pro Val Pro Pro Pro Pro Pro Leu Pro Pro
            100                 105                 110

Ser Ser Val Glu Asp Asp Trp Gly Gly Pro Ala Thr Glu Pro Pro Ala
        115                 120                 125

Ser Leu Leu Ser Ser Ala Ser Ser Asp Asp Phe Cys Lys Glu Lys Thr
    130                 135                 140

Glu Asp Arg Tyr Ser Leu Gly Ser Ser Leu Asp Ser Gly Met Arg Thr
145                 150                 155                 160

Pro Leu Cys Arg Ile Cys Phe Gln Gly Pro Glu Gln Gly Glu Leu Leu
                165                 170                 175

Ser Pro Cys Arg Cys Asp Gly Ser Val Lys Cys Thr His Gln Pro Cys
            180                 185                 190

Leu Ile Lys Trp Ile Ser Glu Arg Gly Cys Trp Ser Cys Glu Leu Cys
        195                 200                 205

Tyr Tyr Lys Tyr His Val Ile Ala Ile Ser Thr Lys Asn Pro Leu Gln
    210                 215                 220

Trp Gln Ala Ile Ser Leu Thr Val Ile Glu Lys Val Gln Val Ala Ala
225                 230                 235                 240

Ala Ile Leu Gly Ser Leu Phe Leu Ile Ala Ser Ile Ser Trp Leu Ile
                245                 250                 255
```

```
Trp Ser Thr Phe Ser Pro Ser Ala Arg Trp Gln Arg Gln Asp Leu Leu
            260                 265                 270

Phe Gln Ile Cys Tyr Gly Met Tyr Gly Phe Met Asp Val Val Cys Ile
        275                 280                 285

Gly Leu Ile Ile His Glu Gly Pro Ser Val Tyr Arg Ile Phe Lys Arg
    290                 295                 300

Trp Gln Ala Val Asn Gln Gln Trp Lys Val Leu Asn Tyr Asp Lys Thr
305                 310                 315                 320

Lys Asp Leu Glu Asp Gln Lys Ala Gly Gly Arg Thr Asn Pro Arg Thr
                325                 330                 335

Ser Ser Ser Thr Gln Ala Asn Ile Pro Ser Ser Glu Glu Glu Thr Ala
            340                 345                 350

Gly Thr Pro Ala Pro Glu Gln Gly Pro Ala Gln Ala Ala Gly His Pro
        355                 360                 365

Ser Gly Pro Leu Ser His His His Cys Ala Tyr Thr Ile Leu His Ile
    370                 375                 380

Leu Ser His Leu Arg Pro His Glu Gln Arg Ser Pro Pro Gly Ser Ser
385                 390                 395                 400

Arg Glu Leu Val Met Arg Val Thr Thr Val
                405                 410


<210>  58
<211>  278
<212>  PRT
<213>  Homo sapiens

<400>  58

Met Pro Asp Gln Ala Leu Gln Gln Met Leu Asp Arg Ser Cys Trp Val
1               5                   10                  15

Cys Phe Ala Thr Asp Glu Asp Asp Arg Thr Ala Glu Trp Val Arg Pro
            20                  25                  30

Cys Arg Cys Arg Gly Ser Thr Lys Trp Val His Gln Ala Cys Leu Gln
        35                  40                  45
```

```
Arg Trp Val Asp Glu Lys Gln Arg Gly Asn Ser Thr Ala Arg Val Ala
    50                  55                  60

Cys Pro Gln Cys Asn Ala Glu Tyr Leu Ile Val Phe Pro Lys Leu Gly
65                  70                  75                  80

Pro Val Val Tyr Val Leu Asp Leu Ala Asp Arg Leu Ile Ser Lys Ala
                85                  90                  95

Cys Pro Phe Ala Ala Ala Gly Ile Met Val Gly Ser Ile Tyr Trp Thr
            100                 105                 110

Ala Val Thr Tyr Gly Ala Val Thr Val Met Gln Val Val Gly His Lys
        115                 120                 125

Glu Gly Leu Asp Val Met Glu Arg Ala Asp Pro Leu Phe Leu Leu Ile
    130                 135                 140

Gly Leu Pro Thr Ile Pro Val Met Leu Ile Leu Gly Lys Met Ile Arg
145                 150                 155                 160

Trp Glu Asp Tyr Val Leu Arg Leu Trp Arg Lys Tyr Ser Asn Lys Leu
                165                 170                 175

Gln Ile Leu Asn Ser Ile Phe Pro Gly Ile Gly Cys Pro Val Pro Arg
            180                 185                 190

Ile Pro Ala Glu Ala Asn Pro Leu Ala Asp His Val Ser Ala Thr Arg
        195                 200                 205

Ile Leu Cys Gly Ala Leu Val Phe Pro Thr Ile Ala Thr Ile Val Gly
    210                 215                 220

Lys Leu Met Phe Ser Ser Val Asn Ser Asn Leu Gln Arg Thr Ile Leu
225                 230                 235                 240

Gly Gly Ile Ala Phe Val Ala Ile Lys Gly Ala Phe Lys Val Tyr Phe
                245                 250                 255

Lys Gln Gln Gln Tyr Leu Arg Gln Ala His Arg Lys Ile Leu Asn Tyr
            260                 265                 270

Pro Glu Gln Glu Glu Ala
```

275

<210> 59
<211> 971
<212> PRT
<213> Homo sapiens

<400> 59

Val Ser Leu Ala Phe Cys Gln Pro Leu Ser Leu Ser Leu Ser Pro Leu
1 5 10 15

Leu Pro Leu Ala Ser Ser Leu Ala Pro Glu Arg Thr His Leu Pro Gly
20 25 30

Pro Gly Ser Leu Leu Leu Ser Pro Pro Ser Phe Pro Ala Arg Pro Arg
35 40 45

Glu Pro Arg Gly Cys Val Thr Ala Ala Pro Pro Asp Lys Met Asp Thr
50 55 60

Ala Glu Glu Asp Ile Cys Arg Val Cys Arg Ser Glu Gly Thr Pro Glu
65 70 75 80

Lys Pro Leu Tyr His Pro Cys Val Cys Thr Gly Ser Ile Lys Phe Ile
85 90 95

His Gln Glu Cys Leu Val Gln Trp Leu Lys His Ser Arg Lys Glu Tyr
100 105 110

Cys Glu Leu Cys Lys His Arg Phe Ala Phe Thr Pro Ile Tyr Ser Pro
115 120 125

Asp Met Pro Ser Arg Leu Pro Ile Gln Asp Ile Phe Ala Gly Leu Val
130 135 140

Thr Ser Ile Gly Thr Ala Ile Arg Tyr Trp Phe His Tyr Thr Leu Val
145 150 155 160

Ala Phe Ala Trp Leu Gly Val Val Pro Leu Thr Ala Cys Arg Ile Tyr
165 170 175

Lys Cys Leu Phe Thr Gly Ser Val Ser Ser Leu Leu Thr Leu Pro Leu
180 185 190

Asp Met Leu Ser Thr Glu Asn Leu Leu Ala Asp Cys Leu Gln Gly Cys

```
        195                 200                 205

Phe Val Val Thr Cys Thr Leu Cys Ala Phe Ile Ser Leu Val Trp Leu
    210                 215                 220

Arg Glu Gln Ile Val His Gly Gly Ala Pro Ile Trp Leu Glu His Ala
225                 230                 235                 240

Ala Pro Pro Phe Asn Ala Ala Gly His His Gln Asn Glu Ala Pro Ala
                245                 250                 255

Gly Gly Asn Gly Ala Glu Asn Val Ala Ala Asp Gln Pro Ala Asn Pro
            260                 265                 270

Pro Ala Glu Asn Ala Val Val Gly Glu Asn Pro Asp Ala Gln Asp Asp
        275                 280                 285

Gln Ala Glu Glu Glu Glu Glu Asp Asn Glu Glu Glu Asp Asp Ala Gly
    290                 295                 300

Val Glu Asp Ala Ala Asp Ala Asn Asn Gly Ala Gln Asp Asp Met Asn
305                 310                 315                 320

Trp Asn Ala Leu Glu Trp Asp Arg Ala Ala Glu Glu Leu Thr Trp Glu
                325                 330                 335

Arg Met Leu Gly Leu Asp Gly Ser Leu Val Phe Leu Glu His Val Phe
            340                 345                 350

Trp Val Val Ser Leu Asn Thr Leu Phe Ile Leu Val Phe Ala Phe Cys
        355                 360                 365

Pro Tyr His Ile Gly His Phe Ser Leu Val Gly Leu Gly Phe Glu Glu
    370                 375                 380

His Val Gln Ala Ser His Phe Glu Gly Leu Ile Thr Thr Ile Val Gly
385                 390                 395                 400

Tyr Ile Leu Leu Ala Ile Thr Leu Ile Ile Cys His Gly Leu Ala Thr
                405                 410                 415

Leu Val Lys Phe His Arg Ser Arg Arg Leu Leu Gly Val Cys Tyr Ile
            420                 425                 430
```

```
Val Val Lys Val Ser Leu Leu Val Val Glu Ile Gly Val Phe Pro
        435                 440                 445

Leu Ile Cys Gly Trp Trp Leu Asp Ile Cys Ser Leu Glu Met Phe Asp
    450                 455                 460

Ala Thr Leu Lys Asp Arg Glu Leu Ser Phe Gln Ser Ala Pro Gly Thr
465                 470                 475                 480

Thr Met Phe Leu His Trp Leu Val Gly Met Val Tyr Val Phe Tyr Phe
                485                 490                 495

Ala Ser Phe Ile Leu Leu Leu Arg Glu Val Leu Arg Pro Gly Val Leu
            500                 505                 510

Trp Phe Leu Arg Asn Leu Asn Asp Pro Asp Phe Asn Pro Val Gln Glu
        515                 520                 525

Met Ile His Leu Pro Ile Tyr Arg His Leu Arg Arg Phe Ile Leu Ser
    530                 535                 540

Val Ile Val Phe Gly Ser Ile Val Leu Leu Met Leu Trp Leu Pro Ile
545                 550                 555                 560

Arg Ile Ile Lys Ser Val Leu Pro Asn Phe Leu Pro Tyr Asn Val Met
                565                 570                 575

Leu Tyr Ser Asp Ala Pro Val Ser Glu Leu Ser Leu Glu Leu Leu Leu
            580                 585                 590

Leu Gln Val Val Leu Pro Ala Leu Leu Glu Gln Gly His Thr Arg Gln
        595                 600                 605

Trp Leu Lys Gly Leu Val Arg Ala Trp Thr Val Thr Ala Gly Tyr Leu
    610                 615                 620

Leu Asp Leu His Ser Tyr Leu Leu Gly Asp Gln Glu Glu Asn Glu Asn
625                 630                 635                 640

Ser Ala Asn Gln Gln Val Asn Asn Asn Gln His Ala Arg Asn Asn Asn
                645                 650                 655

Ala Ile Pro Val Val Gly Glu Gly Leu His Ala Ala His Gln Ala Ile
            660                 665                 670
```

```
Leu Gln Gln Gly Gly Pro Val Gly Phe Gln Pro Tyr Arg Arg Pro Leu
        675                 680                 685

Asn Phe Pro Leu Arg Ile Phe Leu Leu Ile Val Phe Met Cys Ile Thr
    690                 695                 700

Leu Leu Ile Ala Ser Leu Ile Cys Leu Thr Leu Pro Val Phe Ala Gly
705                 710                 715                 720

Arg Trp Leu Met Ser Phe Trp Thr Gly Thr Ala Lys Ile His Glu Leu
                725                 730                 735

Tyr Thr Ala Ala Cys Gly Leu Tyr Val Cys Trp Leu Thr Ile Arg Ala
            740                 745                 750

Val Thr Val Met Val Ala Trp Met Pro Gln Gly Arg Arg Val Ile Phe
        755                 760                 765

Gln Lys Val Lys Glu Trp Ser Leu Met Ile Met Lys Thr Leu Ile Val
    770                 775                 780

Ala Val Leu Leu Ala Gly Val Val Pro Leu Leu Leu Gly Leu Leu Phe
785                 790                 795                 800

Glu Leu Val Ile Val Ala Pro Leu Arg Val Pro Leu Asp Gln Thr Pro
                805                 810                 815

Leu Phe Tyr Pro Trp Gln Asp Trp Ala Leu Gly Val Leu His Ala Lys
            820                 825                 830

Ile Ile Ala Ala Ile Thr Leu Met Gly Pro Gln Trp Trp Leu Lys Thr
        835                 840                 845

Val Ile Glu Gln Val Tyr Ala Asn Gly Ile Arg Asn Ile Asp Leu His
    850                 855                 860

Tyr Ile Val Arg Lys Leu Ala Ala Pro Val Ile Ser Val Leu Leu Leu
865                 870                 875                 880

Ser Leu Cys Val Pro Tyr Val Ile Ala Ser Gly Val Val Pro Leu Leu
                885                 890                 895

Gly Val Thr Ala Glu Met Gln Asn Leu Val His Arg Arg Ile Tyr Pro
            900                 905                 910
```

```
Phe Leu Leu Met Val Val Val Leu Met Ala Ile Leu Ser Phe Gln Val
        915                 920                 925

Arg Gln Phe Lys Arg Leu Tyr Glu His Ile Lys Asn Asp Lys Tyr Leu
    930                 935                 940

Val Gly Gln Arg Leu Val Asn Tyr Glu Arg Lys Ser Gly Lys Gln Gly
945                 950                 955                 960

Ser Ser Pro Pro Pro Pro Gln Ser Ser Gln Glu
                965                 970
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<210> 60
<211> 225
<212> PRT
<213> Homo sapiens

<400> 60

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Pro Gly Ser Leu Phe Arg Phe Ala Val Pro Pro Ala Leu Gly Ser Asn
1               5                   10                  15

Leu Thr Asp Asn Val Met Ile Thr Val Asp Ile Ile Pro Ser Gly Trp
            20                  25                  30

Asn Ser Ala Asp Gly Lys Ser Asp Lys Thr Lys Ser Ala Pro Ser Arg
        35                  40                  45

Asp Pro Glu Arg Leu Gln Lys Ile Lys Glu Ser Leu Leu Leu Glu Asp
    50                  55                  60

Ser Glu Glu Glu Glu Gly Asp Leu Cys Arg Ile Cys Gln Met Ala Ala
65                  70                  75                  80

Ala Ser Ser Ser Asn Leu Leu Ile Glu Pro Cys Lys Cys Thr Gly Ser
                85                  90                  95

Leu Gln Tyr Val His Gln Asp Cys Met Lys Lys Trp Leu Gln Ala Lys
            100                 105                 110

Ile Asn Ser Gly Ser Ser Leu Glu Ala Val Thr Thr Cys Glu Leu Cys
        115                 120                 125

Lys Glu Lys Leu Glu Leu Asn Leu Glu Asp Phe Asp Ile His Glu Leu
    130                 135                 140
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```
His Arg Ala His Ala Asn Glu Gln Ala Glu Tyr Glu Phe Ile Ser Ser
145                 150                 155                 160

Gly Leu Tyr Leu Val Val Leu Leu His Leu Cys Glu Gln Ser Phe Ser
                165                 170                 175

Asp Met Met Gly Asn Thr Asn Glu Pro Ser Thr Arg Val Arg Phe Ile
            180                 185                 190

Asn Leu Ala Arg Thr Leu Gln Ala His Met Glu Asp Leu Glu Thr Ser
        195                 200                 205

Glu Asp Asp Ser Glu Glu Asp Gly Asp His Asn Arg Thr Phe Asp Ile
    210                 215                 220

Ala
225


<210>  61
<211>  291
<212>  PRT
<213>  Homo sapiens

<400>  61

Met Ser Met Pro Leu His Gln Ile Ser Ala Ile Pro Ser Gln Asp Ala
1               5                   10                  15

Ile Ser Ala Arg Val Tyr Arg Ser Lys Thr Lys Glu Lys Glu Arg Glu
            20                  25                  30

Glu Gln Asn Glu Lys Thr Leu Gly His Phe Met Ser His Ser Ser Asn
        35                  40                  45

Ile Ser Lys Ala Gly Ser Pro Pro Ser Ala Ser Ala Pro Ala Pro Val
    50                  55                  60

Ser Ser Phe Ser Arg Thr Ser Ile Thr Pro Ser Ser Gln Asp Ile Cys
65                  70                  75                  80

Arg Ile Cys His Cys Glu Gly Asp Asp Glu Ser Pro Leu Ile Thr Pro
                85                  90                  95

Cys His Cys Thr Gly Ser Leu His Phe Val His Gln Ala Cys Leu Gln
            100                 105                 110
```

```
Gln Trp Ile Lys Ser Ser Asp Thr Arg Cys Cys Glu Leu Cys Lys Tyr
        115                 120                 125

Glu Phe Ile Met Glu Thr Lys Leu Lys Pro Leu Arg Lys Trp Glu Lys
    130                 135                 140

Leu Gln Met Thr Ser Ser Glu Arg Arg Lys Ile Met Cys Ser Val Thr
145                 150                 155                 160

Phe His Val Ile Ala Ile Thr Cys Val Val Trp Ser Leu Tyr Val Leu
                165                 170                 175

Ile Asp Arg Thr Ala Glu Glu Ile Lys Gln Gly Gln Ala Thr Gly Ile
            180                 185                 190

Leu Glu Trp Pro Phe Trp Thr Lys Leu Val Val Val Ala Ile Gly Phe
        195                 200                 205

Thr Gly Gly Leu Leu Phe Met Tyr Val Gln Cys Lys Val Tyr Val Gln
    210                 215                 220

Leu Trp Lys Arg Leu Lys Ala Tyr Asn Arg Val Ile Tyr Val Gln Asn
225                 230                 235                 240

Cys Pro Glu Thr Ser Lys Lys Asn Ile Phe Glu Lys Ser Pro Leu Thr
                245                 250                 255

Glu Pro Asn Phe Glu Asn Lys His Gly His Gly Ile Cys His Ser Asp
            260                 265                 270

Thr Asn Ser Ser Cys Cys Thr Glu Pro Glu Asp Thr Gly Ala Glu Ile
        275                 280                 285

Ile His Val
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